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10/738,361	12/17/2003	Carlos Avendano	CLABP206	8561

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EXAMINER	
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2609	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/738,361	AVENDANO ET AL.	
	Examiner	Art Unit	
	Paras Shah	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12/17/2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-49* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23,27-44 and 46-49* is/are rejected.

7)☒ Claim(s) *24-26 and 45* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12/17/2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *07/05/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to the Application filed on 12/17/2003.

Specification

2. The disclosure is objected to because of the following informalities: The attorney docket number on page 1, line 9 should be removed. Further, the co-pending U.S. Patent Application number is missing, see line 9).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 46 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear as to what the Applicant is seeking to patent by the limitation "wherein the signal provided to the playback channel comprises at least in part the input signal received for the playback channel." For the purposes of compact prosecution, the claim as a whole was interpreted to mean that the playback channel comprises part of the input audio signal.

5. Claim 47 is rejected as being based upon an indefinite base claim.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-7, 9-15, 22, 27-33, 48, and 49 rejected under 35 U.S.C. 102(b) as being anticipated by Avendano *et al.* ("Ambience Extraction and Synthesis from Stereo Signals for Multi-Channel Audio Up-Mix", May 2002).

As to claims 1, 31, 48 and 49, Avendano *et al.* discloses a method for modifying an audio signal comprising a plurality of channel signals, the method comprising: transforming at least selected ones of the channel signals into a time-frequency domain (see page 1958, right column, sect. 4, 3rd paragraph, lines 1-2); comparing said at least selected ones of the channel signals (see page 1958, right column, sect. 4, 2nd paragraph, lines 3-4) in the time-frequency domain to identify corresponding portions of said channel signals that are not correlated or are only weakly correlated across channels (see page 1958, right column, sect. 4, 3rd paragraph, lines 2-10 and 1st paragraph, lines 3-8); and modifying the identified corresponding portions of said channel signals (see page 1959, left column, equation 5, and 2nd paragraph, lines 11). For claims 48 and 49, it is inherent that a processor was used to produce the simulation (see page 1959, sect. 5) results of Figure 4. Also, the Figure 1 implementation was carried out (see page 1959, sect. 6).

As to claims 2 and 3, Avendano *et al.* discloses defining a metric the value of which is determined for any set of corresponding portions of said channel signals at least in part by the degree of correlation between them (see page 1958, right column, sect. 4, 3rd paragraph, lines 1-2 and equation 2) (e.g. It is inherent that the computation of the cross-correlation will result in a value that defines the similarity between the signals. This is the definition of correlation. The corresponding portions relate to the critical bands between the channels being compared).

As to claim 4, Avendano *et al.* discloses wherein the metric comprises calculating a coherence value (see page 1959, left column, 2nd paragraph, lines 1-4) (e.g. The use of this function allows for the calculation of a coherence value).

As to claim 5, Avendano *et al.* discloses calculating a coherence value comprises using a coherence function, the value of which is approximately equal to one for portions of said channel signals that are highly correlated (see page 1959, left column, 2nd paragraph, lines 1-4) (e.g. The Avendano *et al.* reference states the value of the coherence function of one when the primary signal is dominant or highly correlated).

As to claims 6 and 7, Avendano *et al.* discloses wherein calculating a coherence value comprises a coherence function, the value of which is approximately zero for portions of said channel signals that are uncorrelated or only weakly correlated (see page 1959, left column, 2nd paragraph, lines 1-4) (e.g. the Avendano *et al.* reference states the value of the coherence function being close to zero for weakly correlated since ambience is present (see page 1958, right column, 1st paragraph, lines 3-4).

Further, the actual coherence value for signals uncorrelated are not always zero but close to zero, which includes positive numbers greater than zero.)

As to claim 9, Avendano *et al.* discloses wherein modifying the identified corresponding portions of said channel signals comprises applying a modification function, the value of which for any set of corresponding portions of said channel signals is determined at least in part by the degree of correlation between them (see page 1959, left column, equation 5, and 2nd paragraph, lines 1-10) (e.g. The modification function is multiplied by a coherence value, which implies a degree of correlation between signals).

As to claim 10, Avendano *et al.* discloses wherein the modification function comprises a nonlinear function applied in the time-frequency domain (see page 1959, left column, 2nd paragraph, line 10).

As to claim 11, Avendano *et al.* discloses wherein the modification function comprises a hyperbolic tangent function applied in the time-frequency domain (see page 1959, left column, equation and 2nd paragraph, lines 16).

As to claim 12, Avendano *et al.* discloses wherein modifying the identified corresponding portions of said channel signals comprises multiplying each of said channel signals in the time-frequency domain by a corresponding modification function value (see page 1959, left column, equation 5) (e.g. It is apparent that from the equation that the channel signals are being multiplied by the modification function).

As to claim 13, Avendano *et al.* discloses wherein the modification function has a value equal to approximately one for portions of said channel signals that are not to be modified (see page 1959, left column, 2nd paragraph, lines 12-13).

As to claim 14, Avendano *et al.* discloses wherein the modification function has a value other than one for portions of said channel signals that are to be modified (see page 1959, left column, 2nd paragraph, lines 13-14) (e.g. The Avendano *et al.* reference states that if the value is not 1 then modification is done).

As to claim 15, Avendano *et al.* discloses wherein the modification function has a value equal to approximately one for portions of said channel signals that are to be extracted and a value equal to approximately zero for portions of said channel signals that are not to be extracted (see page 1959, left column, 2nd paragraph, lines 12-14 and lines 5-10) (e.g. It is implied by the Avendano *et al.* reference that the extraction and non-extraction occurs for various time and corresponding frequency indexes as denoted by m and k).

As to claim 22, Avendano *et al.* discloses wherein the step of modifying comprises modifying the identified portions of the audio signal only within a prescribed frequency band (see page 1958, right column, sect. 4, 3rd paragraph, lines 3-6 and page 1959, left column, 1st paragraph, lines 3-5 and 2nd paragraph. (e.g. It is seen from the Avendano *et al.* reference that the frequency bands are modified depending on the identified portions from the coherence and correlation quantities and the use of the same time and frequency index m and k, respectively).

As to claim 27, Avendano *et al.* discloses wherein transforming at least selected ones of the channel signals into a time-frequency domain comprises processing said channel signals using a subband filter bank (see page 1959, right column, Figure 3) (e.g. the Figure shows a subband for ambiance extraction).

As to claim 28, Avendano *et al.* discloses wherein processing said channel signals using a subband filter bank comprises calculating the short-time Fourier transform (STFT) of said channel signals (see page 1959, right column, Figure 3) (e.g. It is seen that the input is transformed using the STFT).

As to claim 29, Avendano *et al.* discloses processing said modified corresponding portions of said channel signals to synthesize a modified time-domain signal (see page 1959, right column, lines 6-8).

As to claim 30, Avendano *et al.* discloses wherein transforming at least selected ones of the channel signals into a time-frequency domain comprises calculating the short-time Fourier transform (STFT) of said channel signals and wherein processing said modified corresponding portions of said channel signals to synthesize a modified time-domain signal comprises performing the inverse STFT on said signals (see page 1959, right column, Figure 3) (e.g. It is seen that the input signals are transformed to the frequency domain and the output signals are converted to the time domain by ISTFT).

As to claim 32, Avendano *et al.* discloses wherein modifying the corresponding portions of said channel signals based on the extent to which said corresponding portions of said channel signals are correlated across channels comprises a nonlinear modification (see page 1959, left column, 2nd paragraph, line 10) (e.g. It is seen that a

nonlinear modification is done. Further, the modification is done based on coherence, which is correlation (see page 1959, left column, 2nd paragraph, lines 11-16).

As to claim 33, Avendano *et al.* discloses wherein modifying the corresponding portions of said channel signals based on the extent to which said corresponding portions of said channel signals are correlated across channels comprises calculating a cross channel coherence value (see page 1959, left column, equation 4).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Avendano *et al.* as applied to claim 2 above, in view of Dolby *et al.* (4,024,344).

As to claim 8, Avendano *et al.* discloses wherein corresponding portions re identified as not correlated or weakly correlated (see page 1959, left column, 2nd paragraph, lines 1-4) (e.g. the Avendano *et al.* reference states the value of the coherence function being close to zero for weakly correlated since ambience is present (see page 1958, right column, 1st paragraph, lines 3-4). However, Avendano *et al.* does not specifically disclose the use of a threshold for identifying the not correlated portions. Dolby *et al.* discloses the use of a threshold for correlated information (see col. 5, lines 4-10). It would have been obvious to one of ordinary skilled in the art to have modified

the teachings presented by Avendano *et al.* with the use of a prescribed threshold. The motivation to have included such a feature involves the ability to recognize uncorrelated portions from correlated portions in order to detect whether the channels are operating in stereo or mono mode (see Dolby *et al.* col. 1, lines 56-59 and col. 2, lines 15-18), which benefits the system presented by Avendano *et al.* for the purposes of detecting stereo information and mono information when performing ambience extraction.

10. Claims 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Avendano *et al.* as applied to claim 9 above, in view of Katz (US 7,076,071).

As to claim 16, Avendano *et al.* discloses the utilization of a modification function to modify portions that is determined to be uncorrelated. However, Avendano *et al.* does not specifically disclose the use of user input for the modification input. Katz *et al.* discloses the use of user input (see col. 14, lines 51-52). It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have combined the teachings presented by Avendano *et al.* with the use of user input presented by Katz. The motivation to have combined the two references involve the allowance of the user to set the modification function based on user preference and sound quality (see Katz, col. 9, lines 10-12) as would benefit the teachings presented by Avendano *et al.* audio signal based on user preference.

As to claim 17, Avendano *et al.* discloses the scaling factor by which the modification function are multiplied (see equation 6, parameters μ_1 and μ_o divided by 2). Katz discloses the use of user input.

As to claim 18, Avendano *et al.* discloses the value of a parameter comprising part of the modification function (see equation 6, parameters μ_1 and μ_o). Katz discloses the use of user input.

As to claim 19, Avendano *et al.* discloses wherein the parameter determines at least in part a maximum value for the modification function (see page 1959, sect. 4., left column, 2nd paragraph, lines 18-25).

As to claim 20, Avendano *et al.* discloses wherein the parameter determines at least in part a minimum value for the modification function (see page 1959, sect. 4., left column, 2nd paragraph, lines 18-25).

11. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Avendano *et al.* in view of Katz as applied to claim 16 above, and further in view of Klayman (US 6,285,7670).

As to claim 21, Avendano *et al.* and Katz do not specifically disclose the bandwidth for which the modification is performed. However, Klayman does disclose the use of a bandwidth (see col. 20, lines 16-17). It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have modified the teachings of Avendano *et al.* and Katz with the use of a bandwidth presented by Klayman. The motivation to have combined the references allow for signal enhancement that is specific to the user (see Klayman, col. 20, lines 16-17), which would benefit the teachings of Avendano *et al.* for a specific frequency range of enhancement rather than the entire frequency spectrum.

12. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Avendano *et al.* as applied to claim 22 above, in view of Klayman (US 6,285,7670).

As to claim 23, Avendano *et al.* does not specifically disclose the bandwidth for which the modification is performed. However, Klayman does disclose the use of a bandwidth (see col. 20, lines 1-2). It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have modified the teachings of Avendano *et al.* and Katz with the use of a bandwidth presented by Klayman. The motivation to have combined the references allow for signal enhancement that is specific to the user (see Klayman, col. 20, lines 1-2), which would benefit the teachings of Avendano *et al.* for a specific frequency range of enhancement rather than the entire frequency spectrum.

13. Claim 34-40, 46, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Avendano *et al.* in view of Fincham (US 2002/0154783).

As to claims 34 and 35, Avendano *et al.* discloses receiving an input audio signal comprising a plurality of input channel signals (see page 1959, right column Figure 3) (e.g. the inputs) transforming at least selected ones of the channel signals into a time-frequency domain (see page 1958, right column, sect. 4, 3rd paragraph, lines 1-2); comparing said at least selected ones of the channel signals (see page 1958, right column, sect. 4, 2nd paragraph, lines 3-4) in the time-frequency domain to identify corresponding portions of said channel signals that are not correlated or are only weakly correlated across channels (see page 1958, right column, sect. 4, 3rd paragraph, lines 2-10 and 1st paragraph, lines 3-8); and modifying the identified corresponding portions

of said channel signals (see page 1959, left column, equation 5, and 2nd paragraph, lines 11). However, Avendano *et al.* does not specifically disclose the combining of the extracted portions and providing to the playback channel the portions of the channel signals that are not correlated. Fincham *et al.* does disclose the combining of two channels by subtraction (see Figure 11, elements 1121, 1122, 1140, 1148, and 1149) (e.g. The signals are combined by subtracting the signals. Then goes through phase and delays. Then it is presented at output for playback (see page 5, [0048] and page 6, [0053]) (e.g. The speakers). It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have modified the teachings of Avendano *et al.* with the combining of the two extracted portions of the channels. The motivation to have combined the two references involves the flow frequency boost over a specified frequency range in order to correct timbral balance for the channel signals (see page 2, [0014], lines 12-17) discussed by Avendano *et al.*

As to claim 36, Fincham discloses wherein the playback channel comprises a first playback channel (see Figure 12, element 1214) and further comprising providing to at least one additional playback channel (see Figure 12, element 1215, 1224, and 1225) a signal comprising at least in part said extracted and combined identified corresponding portions of said input channel signals (see Figure 11, elements 1121 and 1122). It should be noted that the Fincham reference states that Figure 12 is a surround format playback of Figure 11 (see [0030]). Avendano *et al.* discloses a the corresponding portions of said input channel signals that are not correlated or are

weakly correlated to represent the ambience signals (see page 1958, sect. 4, right column, 1st paragraph, lines 1-4).

As to claim 37, Fincham discloses comprising decorrelating the signal (see Figure 12, element 1271 and page 4, [0045]) provided to said first playback channel (see Figure 12, element 1214) and the signal provided to said at least one additional playback channel (see Figure 12, element 1215). Further, Avendano *et al.* suggests the use of all-pass filters for de-correlation (see page 1960, sect. 6, left column, 1st paragraph).

As to claim 38, Fincham discloses wherein decorrelating the signal provided to said first playback channel and the signal provided to said at least one additional playback channel comprises processing the signal provided to each respective playback channel using an all-pass filter (see Figure 11, elements 1157, 1155 and elements 1158, 1156) configure to apply a phase adjustment that is different than the phase adjustment applied to the respective signals provided to the other playback channel(s) (see page 5, [0049] and page 6, [0053]) (e.g. It is seen that form the Fincham reference that the phase compensation is different for the two respective channels. It is also noted that Figure 12 is a playback operation for the system of Figure 11 (see [0030]).

As to claim 39, Fincham discloses wherein decorrelating the signal (see Figure 12, element 1271 and page 4, [0045]) provided to said first playback channel (see Figure 12, element 1214) and the signal provided to said at least one additional playback channel (see Figure 12, element 1215) comprises processing the signal provided to each respective playback channel using a delay line configured to apply a

delay that is different than the delay applied to the respective signals provided to the other playback channel(s) (see Figure 16, elements 1655 and 1656, and page 7, right column, paragraph [0062], lines 1-10) (e.g. Since the spectral weighting filter will cause a delay to occur, a respective delay is applied to the left and right channels).

As to claim 40, Avendano *et al.* discloses the modification of the extracted combined portions (see page 1959, sect. 4, left column, 2nd paragraph, lines 4-11) prior to providing them to playback channel (e.g. From the Avendano *et al.* reference the ambience channels are modified prior to playback since these signals are used to feed the surround channels (see Avendano *et al.* Abstract).

As to claims 46 and 47, Avendano *et al.* discloses the extraction of the uncorrelated or weakly correlated portions of the signal (see page 1959, left column, 2nd paragraph, lines 12-14 and lines 5-10). However, Avendano *et al.* does not specifically disclose the use of the playback channel and combining the extracted portions and the input audio signal. Fincham discloses wherein the input audio signal comprises an input signal for the playback channel (see Figure 11, element 1121) and wherein the signal provided to the playback channel comprises at least in part the input signal received for the playback channel (see Figure 11, element 1165, output and Figure 12, element 1214) (e.g. The output of element 1165 consists of part of the input signal and a modified portion of the difference signal element 1153. The signal is combined at element 1165. The latter citation is the playback channel for the input from Figure 11). It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have combined the teachings of Avendano *et al.* with the combining of the

extracted portions and the input audio presented by Fincham. The motivation to have combined the two references involve the restoration of modification of the audio signal for enhancement or timbral balance as noted by Fincham (see Fincham, Abstract).

14. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Avendano *et al.* in view of Fincham (US 2002/0154783) as applied to claim 34 above, further in view of Katz (US 7,076,071).

As to claim 41, Avendano *et al.* discloses the utilization of a modification function to modify portions that is determined to be uncorrelated. However, Avendano *et al.* does not specifically disclose the use of user input for the modification input. Katz *et al.* discloses the use of user input (see col. 14, lines 51-52). It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have combined the teachings presented by Avendano *et al.* with the use of user input presented by Katz. The motivation to have combined the two references involve the allowance of the user to set the modification function based on user preference and sound quality (see Katz, col. 9, lines 10-12) as would benefit the teachings presented by Avendano *et al.* audio signal based on user preference.

15. Claims 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Avendano *et al.* in view of Fincham as applied to claim 41 above, and further in view of Katz and Klayman.

As to claim 42, Avendano *et al.* discloses the gain factor by which the modification function is multiplied (see equation 6, parameters μ_1 and μ_o divided by 2). However, Avendano *et al.* and Fincham do not specifically disclose the use of a gain

amplifier and user input. Katz discloses the use of user input (see col. 14, lines 51-52). Klayman discloses the use of a gain amplifier (see Figure 15, element 1319) (e.g. AGC stands for automatic gain control) . It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have combined the teachings of Avendano *et al.* and Fincham with the use of an amplifier and user input presented by Katz and Klayman. The motivation to have combined the two references involve the allowance of the user to set the modification function based on user preference and sound quality (see Katz, col. 9, lines 10-12) as would benefit the teachings presented by Avendano *et al.* audio signal based on user preference. Further, the motivation to have combined the amplifier involves the amplification of channel signals (see col. 7, lines 54-57), which would benefit the teachings of Avendano *et al.* for low amplitude signals during ambience extraction.

As to claim 43, Klayman discloses the use of a bandwidth or frequency range determined by the user (see col. 20, lines 1-2). It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have modified the teachings of Avendano *et al.* and Katz with the use of a bandwidth presented by Klayman. The motivation to have combined the references allow for signal enhancement that is specific to the user (see Klayman, col. 20, lines 16-17), which would benefit the teachings of Avendano *et al.* for a specific frequency range of enhancement rather than the entire frequency spectrum.

As to claim 44, Klayman discloses wherein the bandwidth is implemented using a bandpass filter (see col. 20, lines 16- 21) and the user input determines at least in part

the lower and upper frequencies (see col. 20, lines 24-29) (e.g. It is implied by the use of bandpass filters that a specific frequency range will be used.)

Allowable Subject Matter

16. Claims 24-26 and 45 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

17. The following is a statement of reasons for the indication of allowable subject matter: Claims 24-26 contain allowable subject matter because none of the prior art or combination teach the claimed limitation of an "input ratio ... numerator comprises ... uncorrelated...denominator comprises... overall signal channel; ... user input of output ratio." Further, none of the prior art or combination teach the limitations "...the magnitude of the respective portions... that are not correlated... taking absolute difference of the magnitude values..." as required in claim 45.

Conclusion

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gerzon (US 5,761,287) is cited to disclose an audio processing method responsive to input audio signal to provide a stereo effect. Jot *et al.* (US 6,917,686) is cited to disclose a method for processing sound sources for environmental

reverberation. Baumgarte *et al.* (US 7,006,636) is cited to disclose a coherence-based modification producing auditory scenes.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paras Shah whose telephone number is (571)270-1650. The examiner can normally be reached on MON.-FRI. 7:30a.m.-5:00p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xiao Wu can be reached on (571)272-7761. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

P.S.

04/27/2007

XIAO WU
SUPERVISORY PATENT EXAMINER